A New Species of *Geonoma* (Arecaceae) from Panama

Gregory C. de Nevers
California Academy of Sciences, Golden Gate Park, San Francisco, California 94118, U.S.A.

Michael H. Grayum
Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166–0299, U.S.A.

ABSTRACT. *Geonoma mooreana* is described from wet forests on the Atlantic slope of western Panama.

Review of herbarium material for floristic and monographic projects involving Central American palms (Arecaceae) has revealed the following new Panamanian species of *Geonoma* (Arecoideae: Geonomeae).

Geonoma mooreana de Nevers & Grayum, sp. nov. TYPE: Panama. Veraguas: vicinity Santa Fe, along road between Santa Fe and Calovébora, 1.7 mi. past Alto Piedra School, 1.5 mi. beyond Quebrada Cosilla (previously referred to as Río Primero Braso), 8°33′N, 81°08′W, 570 m, 13 July 1994 (fruit), *Croat & Zhu 76826* (holotype, MO; isotypes, CAS, PMA).

Species cum *G. tenuissima* H. E. Moore optime congruens, sed differt foliis regulariter pinnatis pinnis angustis, inflorescentiis majoribus, labio infero fovearum floralium bifidoque.

Stems caespitose, with to at least 4 stems per plant, 2–3.5 m high, slender, to at least 1.7 cm diam. at nodes; leaves regularly pinnate; sheath 9–18+ cm; petiole 41–52 cm, broadly channeled adaxially, rounded abaxially; rachis 62–81 cm, occasionally terminating in a slender filament to at least 1.7 cm; pinnae 25–35(–51) per side, narrowly linear with one prominent raised vein adaxially, one prominent and two less prominent raised veins abaxially, 9–42 × 0.4–1.5(–3.1) cm, glabrous or essentially so; inflorescence infrafoliar, 2–4 nodes below current leaves, paniculate, branched to three orders, 24–32 × 18–38 cm; peduncle 6–17 cm; prophyll and peduncular bract inserted close together at base of peduncle; prophyll 11–15.5(–21) × 2.8–5.0 cm, slightly swollen in bud, obscurely striate; peduncular bract slightly smaller than prophyll, included in it; inflorescence rachis 6–20.5 cm, with 4–7 primary branches; rachillae ca. 110–165, reddish, 13–19 cm × 0.5–1 mm, sparsely to moderately setulose at anthesis (later glabrescent), drying rugose; floral pits spirally arranged, ca. 1–2 mm apart, the lips prominently exserted from the rachillae, the lower lip bifid, the orifice ca. 1 × 1 mm; staminate flowers ca. 3 mm, sepals and petals subequal, free, erect at anthesis, slightly imbricate below; stamens 6, filaments spreading, anthers sharply reflexed from the filaments; pistillate flowers ca. 2 mm, sepals and petals subequal, barely exserted, styles 3, reflexed, staminodial tube truncate; fruit oblong to globose, green, drying brown, 5–6 × 4–5 mm, surface minutely verrucose (pebbled); seed black, oblong, 4–5 mm; germination unknown. Figure 1.

Geonoma mooreana occurs in wet forests on the Atlantic slope of western Panama, at elevations of ca. 100–1000 m. It has been collected about 30 km from the Costa Rican border in Bocas del Toro Province. The apparent geographic discontinuity between the Bocas del Toro and Veraguas stations is probably spurious, as the area in question is one of the most poorly collected in Panama.

Geonoma mooreana is most similar phenetically to *G. scoparia* Grayum & de Nevers, *G. concinna* Burret, and *G. tenuissima* H. E. Moore. *Geonoma scoparia*, with which specimens representing *G. mooreana* were compared by Grayum and de Nevers (1988: 113), shares the highly branched, broomlike inflorescence and pebbled fruit, but differs in its consistently solitary habit, generally smaller dimensions, trijugate leaves, and crenate (vs. truncate) staminodial tube. *Geonoma concinna* has the truncate staminodial tube and pebbled fruits of *G. mooreana*, but differs in its consistently trijugate leaves, much smaller inflorescence bracts, and fewer, thicker rachillae. The inflorescence of *G. mooreana* also resembles that of *G. tenuissima* of Ecuador, which differs in its simple leaf blades, shorter, more delicate inflorescence rachillae, and floral pits with the lower lip entire rather than bifid.

Several collections of *Geonoma mooreana* bear incomplete or partial inflorescences. Bulky palm inflorescences usually must be pruned for pressing, and the severed branches are often used to make

Figure 1. *Geonoma mooreana* de Nevers & Grayum (A [except fruits], *Nee 11252*; B, *Hammel 3459*; A [fruits], C, *Kirkbride & Duke 649*). —A. Section of stem with leaf base and inflorescence (many rachillae removed for clarity) (×0.50). —B. Medial portion of leaf (×0.75). —C. Section of infructescence rachilla with fruits (×1.75).

duplicate specimens. Thus, the PMA and CAS isotypes of *G. mooreana* include the main basal and suprabasal branches (respectively) that are missing from the holotype infructescence. Isolated branches may easily be mistaken for entire inflorescences or infructescences in the herbarium, yielding substantially false impressions of such attributes as peduncle length, overall inflorescence size, and the number of rachillae.

The specific epithet commemorates the late Harold E. Moore, Jr. (1917–1980), leading palm authority of his generation, who realized this was a new species and annotated two of the paratypes (*Hammel 3459* and *Nee 11252*) as "*Geonoma* sp. nov."

Paratypes. PANAMA. **Bocas del Toro:** between Q. Lugron and Cerro Bonyic, nr. Río Teribe, 90–270 m, 13 Apr. 1968 (fruit), *Kirkbride & Duke 649* (MO, NY). **Coclé:** Atlantic slope along Río San Juan above its fork with Río Tife, ca. 1200 ft., 12 June 1978 (fruit), *Hammel 3459* (MO). **Veraguas:** Caribbean slope above Río Primero Brazo 5 mi. NW of Santa Fe, 700–1200 m, 18–19 Mar. 1973 (flower), *Croat 23120* (MO 2 sheets); along road between Escuela Agrícola and Alto Piedra (above Santa Fe) and Río Dos Bocas ca. 5–8 km from Escuela, 730–770 m, 26 July 1974 (bud), *Croat 25931* (MO); rd. from Santa Fe to Calovébora, creek about 5 km beyond Escuela Agrícola, ca. 500 m, 8°40′N, 81°5′W, 1 Mar. 1995 (past fruiting), *de Nevers et al. 10601* (CAS); lower montane wet forest 7 km W of Santa Fe on new road past agricultural school, ca. 2900 ft., 12 Apr. 1974 (flower/young fruit), *Nee 11252* (MO).

Acknowledgments. We are indebted to Kathy Bell for the excellent line drawings of *Geonoma mooreana*, and to John Dransfield and an anonymous reviewer for valuable comments on the manuscript.

Literature Cited

Grayum, M. H. & G. C. de Nevers. 1988. New and rare understory palms from the Península de Osa, Costa Rica, and adjacent regions. Principes 32: 101–114.